

Syphilis, hepatitis A, hepatitis B, and cytomegalovirus infection in homosexual men in Antwerp

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SUMMARY In a homosexual communication centre in Antwerp 196 homosexual men were screened for seromarkers of syphilis, hepatitis A (HAV), hepatitis B (HBV) and cytomegalovirus (CMV). A comparison group consisted of 118 heterosexual men attending a venereal disease clinic in Antwerp. Treponemal antibodies were found in 7·1% of homosexual men, of whom half gave no history of past or present infection. Anti HAV was present in 43·3%, HBV seromarkers in 34·4%, and CMV antibodies in 71·2% of homosexual men. Hepatitis B surface antigen (HBsAg) was detected in eight homosexual men, but not in the heterosexual control group. Prevalence rates of infections other than HAV were significantly higher in homosexual men than in heterosexual men. Answers to a questionnaire were used to evaluate risk factors for different diseases, which were: duration of active homosexuality for all infections, promiscuity (≥ 10 partners in the past six months) for syphilis and hepatitis B, and anal intercourse for hepatitis B. Visiting saunas and travelling for sexual contacts also indicated a higher risk for STD, but were an indirect expression of promiscuity.

Introduction

Active homosexual men are at high risk of acquiring sexually transmitted diseases (STD).¹⁻³ Besides the classical venereal diseases such as syphilis and gonorrhoea there is a much higher prevalence of hepatitis B (HBV), hepatitis A (HAV), and cytomegalovirus (CMV) antibodies in the homosexual population compared with heterosexual men.⁴⁻⁶ Most studies were conducted in cities whose large homosexual sub-populations have international importance in gay life, and usually in centres such as saunas⁷⁻⁸ or STD clinics⁹⁻¹¹ possibly reaching only selected high risk persons. To estimate the prevalence of treponemal, HBV, HAV, and CMV antibodies in an average homosexual population, a pilot study was carried out in a gay communication centre in Antwerp, a city which is not a target of international gay travelling activity. The communication centre was chosen for screening because it is not primarily a place for sexual encounters. Furthermore, as this was the first study

of homosexual men in Belgium, health education was connected with blood sampling, and the participants were given a questionnaire on sexual activities and previous STD to provide information on risk factors.

Materials and methods

STUDY POPULATION

Anonymous screening was offered to visitors at a gay communication centre on consecutive weekends in October 1981 and May 1982 when there was a discotheque. All participants were given a number corresponding to that of their blood sample. Only men declaring themselves to be exclusively or predominantly homosexual were included. In October 135 men were screened and in May there were 61 new participants and 38 repeaters. Details of residence, profession, sexual preference, age, duration of active homosexuality, and number of partners in the last six months were comparable for both groups. Data from both periods were analysed together. The questionnaire inquired about duration of active homosexuality and number of partners in the preceding six months, preferred places for sexual encounter, travel history, sexual practices, and STD history.

A control group of 118 consecutive heterosexual

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men attending the STD clinic of the Institute of Tropical Medicine in Antwerp were also studied. Only the number of sex partners in the last six months, age, and history of jaundice were recorded. Blood samples (10 ml) were taken from all participants, and the serum was preserved at -70°C within 24 hours at 4°C .

LABORATORY PROCEDURES

All serum samples were tested by quantitative RPR (rapid plasma reagin: Hynson, West-Cott, and Dunning) and MHA-Tp (microhaemagglutination *Treponema pallidum*; Fujizoki) tests and for Hepatitis B surface antigen (HBsAg), anti HBs, anti Hepatitis B core (HBc), Hepatitis B e antigen (HBeAg), anti HBe, anti hepatitis A virus (HAV) IgM, and anti HAV IgG (all Abott radioimmunoassay), and complement fixing anti cytomegalovirus (CMV) antibodies (Behringwerke).

STATISTICAL TESTS

Results were analysed using the χ^2 and Fisher's exact tests.

Results

GENERAL DATA

The average age of the homosexual participants was 28 (range 18-61) years, duration of homosexual activity 9 (range <1-45) years, and mean number of different partners within the preceding six months was five (range 0-150). Of the 196 men, 81% were exclusively homosexual. The predominant social group was office employees (78.6%), and 75% were Antwerp residents. The median age of the heterosexual group was 29 (range 16-61) years and number of different sex partners was three (range 1-50).

Table I lists previous episodes of STD reported by the homosexual men. In nine of the 16 who gave a history of syphilis there was no serological evidence as the MHA-Tp tests gave negative results.

SEROLOGICAL DATA

Table II summarises the results of the serological tests. Of the 14 homosexual men with positive results

TABLE I Reported history of sexually transmitted diseases by 195 homosexual men in Antwerp

No (%) of men with history of:	
Gonorrhoea, urethral	52 (26.6)
Gonorrhoea, anal	9 (4.6)
Syphilis	16 (8.2)
Genital herpes	10 (5.1)
Anal warts	15 (7.7)
Pediculosis	127 (65.1)
Scabies	52 (26.6)

to the MHA-Tp test, seven gave no history of treatment for syphilis. Four of these men had positive RPR test results and were classified as having untreated syphilis (3.6% of the study population). Of 34 giving negative results in October whose blood was retested in May, one showed positive RPR test results. Antibodies to HAV were found in about half of all men tested, but anti HAV IgM was found in only one homosexual man. Three of 21 previously seronegative homosexuals had antibodies to HAV when retested in May 1982. Over 70% of homosexual men had antibodies to CMV, with a median titre of 1/64 (range 1/4 to 1/2048). When retested seven months later, two of 13 previously seronegative men had developed CMV antibodies and three of 22 previously seropositive men had a significant rise in antibody titre.

Table III shows the distribution of different serum markers for HBV in the homosexual population. Eight (4.1%) men carried HBsAg, six of whom had e antigen. When tested seven months later, two of 26 men giving previously negative results showed a seroconversion. HBsAg was not found among the heterosexuals. Among men with serum markers for hepatitis A or B, 83 of 114 (72.8%) had not experienced jaundice. This included 21 with both HAV and HBV antibodies, and half the men with HBsAg had no history of icterus.

RISK FACTORS

Serological markers for syphilis, HAV, HBV, and CMV infection were all significantly related to duration of homosexual activity ($p < 0.005$ to $p < 0.0005$). Only serum markers for HBV, however, correlated

TABLE II Evidence of past or present infections in 196 homosexual men and in 118 heterosexual men in Antwerp

Infection	Homosexual men		Heterosexual men		Probability
	No tested	No (%) positive	No tested	No (%) positive	
Syphilis	196	14 (7.1)	118	2 (1.7)	0.05
Hepatitis A	194	84 (43.3)	95	52 (54.7)	NS
Hepatitis B	195	67 (34.4)	66	8 (12.1)	0.001
Cytomegalovirus	191	136 (71.2)	95	54 (56.8)	0.025

NS = not significant.

TABLE III *Distribution of serum markers for hepatitis B in 195 homosexual men in Antwerp*

No of men	Distribution of markers				
	HBsAg	HBeAg	anti HBc	anti HBs	anti HBe
5	+	+	+	-	-
1	+	+	+	+	-
1	+	-	+	-	+
1	+	-	+	+	+
1	-	NT	+	-	NT
3	-	NT	-	+	NT
55	-	NT	+	+	NT
128	-	NT	-	-	NT

+ = positive; - = negative; NT = not tested.

significantly with the number of sexual partners in the past six months (table IV). There was no correlation between the number of partners and serum markers for HAV or CMV infection.

The 181 questionnaires which were evaluable for sexual behaviour showed that almost all men (95.6%) practised orogenital contact, which was not further evaluated as a risk factor. Anogenital contact was reported by 146 (80.7%) men of whom 27.4% had only active, 17.1% only passive, and 55.5% both kinds of such contact. The prevalence of seromarkers was found to be greatest in men practising both active and passive anal intercourse (table V). Oroanal contact was reported by 47.0%, and men practising anilingus were 4.12 times more likely to have HBV markers than those who did not engage in oroanal sex ($p < 0.0005$). There was no correlation between anilingus and markers for other infections. Swallowing semen was not correlated with any marker.

Significantly more HBV serum markers were detected among the 91 men visiting saunas (50.0% seropositive; $p < 0.025$). Sauna visits in this population, however, were an indication both of duration of homosexual activity and of number of partners, and not an independent risk factor. Short trips to other cities for sexual contacts were made by 47.2% of homosexual men. There were significantly more HBV seropositive "travelling" men (47.3% v 23.5%; $p < 0.0001$).

Men with a marker for HAV were significantly more at risk for an HBV marker and vice versa ($p < 0.01$). There was also a significant association between syphilis and HBV ($p = 0.037$; Fisher's exact test), and a positive STD history and HBV ($p < 0.005$).

Discussion

Compared with studies made in saunas showing syphilis prevalence rates of 33.9% and 19.3%,^{7,8} we found positive reactions to MHA-Tp tests in only 7.1% of our study population. On the other hand, more than a quarter of all seropositive people were found to be untreated. This is more than in an STD clinic population (1.1% untreated cases) examined by Judson.⁴ Only a third of our study participants gave a history of syphilis check ups. This might be one reason for the comparatively high rate of untreated cases of syphilis, in spite of the minor endemicity of the disease.

Studies on the prevalence of HBV seromarkers in homosexual men have shown that more than half (34.0-70.9%) have anti HBs,^{6-11,13} whereas in our study group less than a third had anti HBs. The prevalence of HBsAg (4.1%), however, falls within the range found in other studies (3.6-6.1%).^{6-11,13} HBeAg is associated with a ten times greater rate of infection by needle stick exposure than HBsAg alone.¹⁴ HBeAg was demonstrable in six of 13 HBsAg positive men, two of whom were traced and found to be carriers. As there is still a considerable number of susceptible individuals, our results emphasise the need for vaccination where there is risk of infection.

In a prospective study Corey showed the sexual transmission of HAV in homosexual men.¹⁵ Outbreaks were reported in Copenhagen,¹⁶ London,¹⁷ and West Berlin.¹⁸ In contrast to these findings, our study showed no significant differences in HAV antibodies between homosexuals and heterosexuals. Belgium has hepatitis A epidemiology that is similar to mediterranean rather than central or north European countries. Half the general population is seropositive by the age of 25.¹⁹ This could explain the

TABLE IV *Number of sexual partners and serological markers for hepatitis A, hepatitis B, and cytomegalovirus infection in homosexual men in Antwerp*

Markers of past or present infection	Number of different partners in the past six months				
	One to nine		Ten or more		Probability
	No tested	No (%) positive	No tested	No (%) positive	
Hepatitis B	117	30 (25.6)	53	27 (50.9)	0.005
Hepatitis A	115	43 (37.4)	53	28 (52.8)	NS
Cytomegalovirus	114	77 (67.5)	53	42 (79.2)	NS

NS = not significant.

TABLE V Serum markers for hepatitis B and anogenital contact

Type of anogenital contact	No tested	No (%) positive	Odds ratio
None	41	9 (21.9)	
Active only	38	9 (23.7)	1.08
Passive only	26	8 (30.8)	1.41
Both active and passive	82	39 (47.6)	2.17

lack of correlation in our study group between HAV antibodies and anilingus, which is considered to be the route of transmission.¹⁵

There was a significant difference in CMV antibodies between study (72.1%) and control (56.8%) groups. This is consistent with the results of Drew⁵ and shows evidence of sexual transmission in male homosexuals.

Risk factors for acquiring STD in homosexual men are: number of different partners, duration of homosexual activity, anogenital and oroanal practices, anonymous contacts (for instance in saunas), and a positive history of any STD.¹⁻¹⁰ The de facto parenteral transmission of HBV during oroanal or anogenital contacts was recently shown by careful pathological studies.²⁰ Duration of homosexuality in our study group correlated significantly with HBV, HAV, or CMV infection. For HAV, this reflects the general epidemiology rather than the possibility of sexual transmission, and this is confirmed by a lack of correlation with promiscuity. Anilingus and both active and passive anal intercourse correlated significantly with HBV seropositivity, which confirmed the results of other studies.¹¹⁻²⁰

Visiting a sauna permits multiple sexual contacts and might represent an effective exposure to infections. HBV seromarkers are significantly higher in sauna visitors, but appeared in our study to be an indicator of the duration of active homosexuality. Short trips for sexual contacts might be another indicator of promiscuity, but also provide a specific risk factor, because places favoured by gay tourism are often areas of high STD endemicity. Our results stress this association regarding HBV. In 1975 Vranckx pointed out the association of syphilis and HBV in blood donors in Belgium,²¹ which was confirmed in homosexual men by Kryger¹⁰ and by our results.

Although Antwerp is not one of the most popular places in the international homosexual scene and has a relatively low level of syphilis, its homosexual community is at high risk of acquiring STD. Regular check ups for syphilis should be encouraged, vaccination against HBV should be easily available, and organisations for medical care and prevention

should actively establish contact tracing and cooperate with local gay organisations.

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